

Memorandum

To : D. W. Dean, Program Supervisor
Agricultural Chemicals and Feed

Date: July 23, 1974

Place: Sacramento

From : Department of Food and Agriculture - Keith T. Maddy, D.V.M., M.P.H.
Agricultural Chemicals and Feed

Subject: Worker Safety Study on Methyl Parathion on Grapes

Attached are the typed notes of our recent observations following the application of methyl parathion to grapes near Soledad. This confirms the data obtained from a similar study in same general area one year before. (See attached report.)

It appears that the decay of methyl parathion on grape foliage is so precipitous in the first 48 hours that after three days, almost no pesticide residue remains and as such a worker reentry safety interval could be set for this use situation at about two or three days.

After this report is edited by the participants, the detailed weather bureau data for June are added and the laboratory procedure write-up is added, we will issue a final report.

Attachment

cc Richard Nutter
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CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE
DIVISION OF INSPECTION SERVICES

STUDY OF DECAY RATE OF METHYL PARATHION APPLIED TO GRAPES

DATE: June 11, 1974 9:30 - 10:00 a.m.

LOCATION: Mirasou Vineyard, San Vincente Vineyard, near Soledad in Monterey County

WEATHER: Clear, windy in afternoons, 72° daily maximum, 50° night minimum for June 11 through June 19.

CROP: Grapes, Chenin Blanc variety

SIZE OF PLOT: 8 rows, 50 plants per row

APPLICATOR: David Farmer, Monterey County Farm Advisor's Office with Farm Advisor Otto Schwab acting as supervisor

PESTICIDE: Red Top Methyl Parathion

MANUFACTURER: Wilbur Ellis

EPA #: 2935-363 AA

APPLICATION RATE: 3/4 lb. per acre

AMOUNT OF PESTICIDE: 3/4 lb. per acre of 5 lb. per gallon emulsifiable concentrate

AMOUNT OF DILUENT: 125 gallons water per acre

APPLICATION VEHICLE: Over the vine, spray boom inverted

APPLICATION PERIOD: 1/2 hour

PEST USED AGAINST: None specified

TREATMENT OF PLOTS

PLOT NUMBER: 34 (6 rows) sprinkled with the equivalent of 1 inch of water in 8 hours

PLOT NUMBER: 31 (4 rows) not sprinkled

SAMPLING PROCEDURE:

One disc was punched from each vine sampled at the same height that grapes are picked. Every other vine of the treated rows was sampled until 80 discs had been collected.

METHYL PARATHION

PLOT 31

RESIDUE ON PLANTS IN P.P.M.

<u>Sampling Interval</u> <u>From Time Of Application</u>	<u>Dislodgable From Leaves</u>	<u>Penetrated Into Leaves</u>	<u>Total Residue</u>
<u>2 Hours Before</u>	<u>< 0.1</u>	<u>< 0.1</u>	<u>< 0.1</u>
Hours After			
0	136.0	16.0	152.0
4	33.8	17.8	51.6
6	22.3	8.3	30.3
20	9.2	3.1	12.2
30	3.3	2.1	5.4
54	1.0	1.4	2.4
82	0.6	0.3	0.9
8.5 days	< 0.1	< 0.1	< 0.1

PLOT 34

RESIDUE IN PLANTS IN P.P.M.

<u>Sampling Interval</u> <u>From Time Of Application</u>	<u>Dislodgable Residue</u>	<u>Penetrated Residue</u>	<u>Total Residue</u>
<u>2 Hours Before</u>	<u>< 0.1</u>	<u>< 0.1</u>	<u>< 0.1</u>
Hours After			
0	169.0	17.1	186.0
4	36.2	14.8	51.0
6	21.7	10.8	32.5
20	10.2	2.8	13.0
30	0.7	0.9	1.6
54	0.1	1.4	1.8
82	0.08	1.36	1.44
8.5 days	< 0.1	< 0.1	< 0.1

March 29, 1973

REPORT OF PLANNED WORK ACCOMPLISHED*

NAME(S) N. E. McCalley, H. Kido LOCATION Monterey

Period covered by this report:

PROJECT PLAN TITLE Insect Control on Wine Grapes

From April 1972

To April 1973

Project Number 13

Primary Subject A31

Secondary Subject A 77

Commodity H6

Subject Audience

Type 10

Research Involved

x
Yes No

Status:

Continuing

Terminated x

Copies to H. Kido, J. Dibble, B. Bailey, R. Neja

INCLUDE IN THIS REPORT: Procedures used; results obtained (including specific changes brought about in knowledge, skills or attitudes, economic benefits or other results); ** technical results where applicable (detailed technical results should be attached to this report and sent to appropriate specialist(s); evaluation of effectiveness of work done and degree to which goals were reached. (Attach additional pages if needed.)

METHYL PARATHION GRAPE LEAF RESIDUE TRIAL

PROCEDURES USED:

Location: Mirrassou Mission Vineyard. Soledad vicinity. Sauvignon blanc variety.

Cooperators: Peter Mirassou, Otto Schwab Mirassou Vineyards; Dick Nutter, Monterey County Agricultural Commissioner, Bill Taylor, Monterey County Department of Agriculture.

The Monterey County Extension Service sprayer was used to apply the treatments using an over-the-vine inverted "U" shaped boom fitted with 3 Spraying Systems adjustable cone-jet nozzles on each side of the boom. The nozzle orifices were AX-20's. Sprays were applied on June 14, 1972 at the rate of 100 gpa at 150 psi. The weather was partially cloudy with no drift during application which began at 10 AM. The sprays were applied to one row the length of the field.

The treatments were methyl parathion 5 lb/gal EC applied at 0.75 lb AI/acre with and without the adjuvant Nu-Film 17 used at the rate of 1 pt/100 gal. of water. The list of treatments and details describing application is given under Table 1. Two methyl parathion treated rows were not irrigated and two were irrigated on the night of June 14, (the day insecticides were applied) with overhead sprinklers for 12 hours providing an equivalent of 1-1/2" of water per acre.

Leaf samples for residue analysis were taken using a 3 cm diameter leaf punch. Sampling procedures was as follows: 10 vines were skipped from the west end of the rows with sampling beginning at the 11th vine. Leaf punches were taken from two outside exposed leaves and two inside leaves providing four leaf punches per vine. Twenty-five vines were sampled for a total of 100 leaf punch discs obtained for each treatment. The leaf punch samples were placed in plastic bags and stored at 0°F in a frozen food locker. On January 9, 1973 the frozen samples were delivered to the California Department of Agriculture Laboratory at Sacramento. Analysis of the 30 samples included in this series was completed on February 9, 1973. Surface and total residues of methyl parathion are shown for the dates the samples were taken in Table 1.

RESULTS:

As seen in Table 1, the dissipation of methyl parathion from the surface of grape leaves is very rapid. Ninety percent of the methyl parathion was lost from the surface of grape leaves receiving no irrigation 1 day after the insecticide was applied and 95.5% was lost by the second day. The effect of overhead irrigation reduced the

* Report on all work completed during the period covered by the project plan within 30 days after end of period covered, or in any case not later than June 30 for all plans ending December 1 to June 1, and by December 31 for all plans ending between June 1 and December 1. If the project is not completed, continue the plan and report rest of results during the next reporting period. A report will be submitted on each reportable project plan as outlined above.

surface residues from grape leaves 96% - 97% one day after application and 98% two days after application of methyl parathion. It is significant to note from Table 1 that methyl parathion residues one day after application were below 1 ppm on the grape leaves receiving the overhead irrigation. This is the established tolerance for methyl parathion residues on grapes at harvest time.

The addition of Nu-Film 17 did not appear to adversely affect the methyl parathion residues remaining in or on the grape leaves: although, there was a trend to higher residues where this adjuvant was used with methyl parathion.

These residue samples indicate the present 21 day re-entry interval required for workers before they are allowed to engage in any activity requiring substantial contact with foliage treated with methyl parathion is not applicable to vines irrigated with overhead sprinklers. These data would indicate an interval of 2 days would provide a safe re-entry period for workers when grape vines are sprayed and irrigated according to the procedures used in this study.

Table 1. -The effects of overhead sprinkler irrigation on methyl parathion residues from grape leaf foliage. Soledad, Calif. 1972.

Treatments	Date sampled and Days after spraying		PPM methyl parathion		
			surface	interior	total
A-Check-unsprayed	6-14-72	0	N. F. -1	N. F. -1	N. F. -1
B-Methyl parathion	6-14-72	0	16.33	28.50	44.83
C-Methyl parathion & Nu-Film 17	6-14-72	0	17.50	37.00	54.50
D-Methyl parathion to be sprinkled	6-14-72	0	11.70	23.17	34.87
E-Methyl parathion & Nu-Film 17 to be sprinkled "		0	25.60	51.25	76.85
A-Check-unsprayed	6-15-72	1	N. F. -1	N. F. -1	N. F. -1
B-Methyl parathion	6-15-72	1	1.58	3.70	5.28
C-Methyl parathion & Nu-Film 17	6-15-72	1	1.92	5.57	7.49
D-Methyl parathion sprinkled	6-15-72	1	0.44	1.14	1.58
E-Methyl parathion & Nu-Film 17 sprinkled	6-15-72	1	0.78	2.49	3.27
A-Check-unsprayed	6-16-72	2	N. F. -2	N. F. -2	N. F. -2
B-Methyl parathion	6-16-72	2	0.72	1.50	2.22
C-Methyl parathion & Nu-Film 17	6-16-72	2	0.77	2.44	3.21
D-Methyl parathion sprinkled	6-16-72	2	0.28	0.62	0.90
E-Methyl parathion & Nu-Film 17 sprinkled	6-16-72	2	0.43	1.22	1.65
A-Check-unsprayed	6-20-72	6	N. F. -2	N. F. -2	N. F. -2
B-Methyl parathion	6-19-72	5	0.12	0.21	0.33
C-Methyl parathion & Nu-Film 17	6-20-72	6	N. F. -3	0.14	N. F. -3
D-Methyl parathion sprinkled	6-19-72	5	N. F. -2	0.02	0.02
E-Methyl parathion & Nu-Film 17 sprinkled	6-20-72	6	N. F. -1	0.03	0.03
A-Check-unsprayed	6-22-72	8	N. F. -1	N. F. -1	N. F. -1
B-Methyl parathion	6-22-72	8	N. F. -3	N. F. -3	N. F. -3
C-Methyl parathion & Nu-Film 17	6-22-72	8	N. F. -3	N. F. -3	N. F. -3
D-Methyl parathion sprinkled	6-22-72	8	N. F. -1	N. F. -1	N. F. -1
E-Methyl parathion & Nu-Film 17 sprinkled	6-22-72	8	N. F. -2	0.02	0.02
A-Check	6-28-72	14	N. F. -1	N. F. -1	N. F. -1
B-Methyl parathion	6-28-72	14	N. F. -3	N. F. -3	N. F. -3
C-Methyl parathion & Nu-Film 17	6-28-72	14	N. F. -3	N. F. -3	N. F. -3
D-Methyl parathion sprinkled	6-28-72	14	N. F. -1	N. F. -1	N. F. -1
E-Methyl parathion & Nu-Film 17 sprinkled	6-28-72	14	N. F. -1	N. F. -1	N. F. -1

Minimum detection levels N. F. -1 0.025 ppm

Minimum detection levels N. F. -2 0.012 ppm

Minimum detection levels N. F. -3 0.09 ppm